

al Sub 1. (AMENDED) A differential casing comprising:

(a) a chamber, having an axle centerline, a centerpoint, and defined by at least one spherical surface and at least one opposing surface, wherein a centerpoint of said at least one spherical surface is substantially collinear with said axle centerline and is offset from the centerpoint of said chamber by an offset distance along said axle centerline in a direction away from said opposing surface.

Sub 3. (AMENDED) An automotive differential mechanism comprising:

(a) a first side gear having a spherical centerpoint;  
(b) a second side gear having a surface; and  
(b) a differential chamber formed by offsetting the spherical centerpoint of said first side gear away from the surface of said second side gear.

4. (AMENDED) An automotive differential mechanism comprising:

al 2 (a) a pinion shaft;  
(b) a first pinion gear;  
(c) a second pinion gear;  
(d) a first side gear, having a first side gear outer radius;  
(e) a second side gear having a second side gear outer radius; and,  
(f) a differential casing having an axle centerline, a casing centerpoint, a first axle shaft port, a second axle shaft port, a first inner radius, a first radius center point, a second inner radius and a second radius center point, wherein said second radius center point is substantially collinear with said axle centerline and offset from said casing centerpoint an offset distance along said axle centerline in a direction away from said first inner radius such that when said first and second pinion gears, said pinion

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shaft and said first and second side gears are installed within said differential casing, said pinion gears and said pinion shaft force said first side gear outer radius into said first inner radius and said second side gear outer radius into said second inner radius such that said first side gear is substantially aligned with said first axle shaft port and said second side gear is substantially aligned with said second axle shaft port.

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6. (AMENDED) A differential mechanism comprising:

(a) a casing adapted to be rotatably driven about an axis of rotation and having a chamber defined by walls;

(b) a pair of pinion gears retained within said chamber rotatable about an axis of rotation normal to and having an intersection point with said axis of rotation of said casing;

(c) a pair of side gears having a part-spherical endwall;

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(d) means for retaining said side gears from rotating within said chamber about the axis of rotation of said pinion gears including a pair of part-spherical regions defined in said chamber, each said region being defined by a wall of said chamber having a spherical shape substantially complementary to the end wall of one of said side gears and each said region providing a recess in said chamber for supporting one of said side gears;

(e) each of said side gear receiving part-spherical regions comprising part of a sphere having a center located on said axis of rotation of said casing and offset from said intersecting point in a direction opposite the offset direction of the other of said side gear receiving part-spherical regions providing a chamber extending more in the axial direction of said casing than in the direction of the axis of rotation of said pinion gears.